

## Information and Communications Technology-Supported Diabetes Prevention and Self-Care Management: Experiences from the EMOTIONAAL Project in Finland

Virpi Kuvaja-Köllner, M.H.S., Marina Steffansson, M.H.S., and Aija Kettunen, Dr.Pol.Sc.

The independence of elderly people might be threatened by the consequences of chronic diseases such as type 2 diabetes mellitus. The use of information and communications technology (ICT) supports self-care management by enabling quick feedback from health care professionals and can also decrease the problems caused by long travel distances in rural areas.<sup>1</sup>

The EMOTIONAAL project developed the ICT-supported concept of a web-based portal ([www.raitti.fi](http://www.raitti.fi)), cell phones, and health measurement devices in the prevention and self-care management of chronic diseases. The aim of the research was to explore the benefits and usability of the developed ICT-supported concept in diabetes prevention and self-care management in the rural area as part of the Finnish primary health care system.

Participants ( $n = 15$ ) of the pilot used a web-based portal or a cell phone combined with the portal to save and send measurements to a nurse. Both groups received feedback from the nurse in 1–3 days. Health checkups were done before and after the pilot. The end users, the pilot participants, and the nurse were interviewed about the usability and benefits of this system. The feedback was handed over to the web-based portal developers.

The pilot participants felt that this system motivated and supported them better than the traditional system based on office visits. It also enforced the security of those unsure of their health. The system saved time and money for clients and for health care professionals and improved their self-management in prediabetes and in diabetes care. Although the duration of the pilot was short (3–5 months), the health outcomes improved slightly during this intervention. The comments by the nurse were also promising. The time resources needed from the nurse for this process were only 1–5 min/patient/checkup. Some face-to-face visits could be replaced by these weekly ICT contacts. The costs of care would be lower and the outcomes of care better.

This pilot showed that the ICT-based self-care management concept with feedback from the nurse well suits the purpose of preventing and treating chronic diseases, especially in rural areas requiring long travel distances. This concept is also very good for necessary followup when starting or changing medication.

Distribution of work between physicians and nurses and whole social and health care systems, including reimbursement and the role of sickness funds and insurance companies, is crucial for successful implementation. The potential of ICT is best for situations in which health care costs are allocated and services are produced by the same organizations because there are strong incentives to use the scarce resources in the best way. If the costs and production of services are separate, there is no incentive for prevention.

---

**Author Affiliation:** Diaconia University of Applied Sciences, Research Centre for Social Economics, Pieksämäki, Finland

**Abbreviation:** (ICT) information and communications technology

**Keywords:** diabetes, end user, feedback, incentive, information and communications technology, reimbursement, self-care management

**Corresponding Author:** Virpi Kuvaja-Köllner, Kauppakatu 1, 76100 Pieksämäki, Finland; email address [virpi.kuvaja-kollner@diak.fi](mailto:virpi.kuvaja-kollner@diak.fi)

---

**Funding:**

This research project was funded by The Ambient Assisted Living Programme and Tekes—the Finnish Funding Agency for Technology and Innovation.

---

**References:**

1. Azar M, Gabbay R. Web-based management of diabetes through glucose uploads: Has the time come for telemedicine? *Diabetes Res Clin Pract.* 2009;83(1):9–17.